What is Claimed is:

1. A gasdynamic bearing motor comprising:

a stationary shaft having a cylindrical surface; and

a rotor assembly having a cylindrical portion facing the stationary shaft with a predetermined clearance interposed therebetween in a radial direction of the stationary shaft and freely rotatably fitted with the stationary shaft, wherein

a pressure generating groove is formed on at least one of an outer circumferential surface of said stationary shaft and an inner circumferential surface of said rotor assembly thereby to construct a radial bearing,

a flange-shaped disk receiving portion extending outwardly in a radial direction is provided at the lower end of said rotor assembly, a predetermined number of recording disks are loaded on the disk receiving portion, a clamp is disposed on the uppermost portion and fixed to said rotor assembly to squeeze the recording disks between the disk receiving portion and the clamp with a predetermined force for fixation of the recording disks, and

said rotor assembly is rotated by a driving motor to hold said rotor assembly and recording disks in a non-contact manner with the stationary shaft, with the action of a dynamic pressure of a gas residing in a clearance between the stationary shaft and the rotor assembly, characterized in that

an annular groove is provided on an end surface of the disk receiving portion side of said rotor assembly coaxially with said stationary shaft.

2. A gasdynamic bearing motor according claim 1, wherein an axial-directional length of a portion forming the radial bearing of said rotor assembly is within 20 mm, an axial-directional thickness of the disk receiving portion is

1.5 mm or more, and a difference in radius between the inner and outer circumferential surfaces of said rotor assembly is within 3 mm.

3. A gasdynamic bearing motor according claim 1 or 2, wherein a depth of the annular groove in the axial direction of the rotor assembly is 1 mm or more.

4. A gasdynamic bearing motor according claim 1 or 2, wherein when a radius of the outer circumferential surface of said rotor assembly is r1 and a radius from the outer circumferential surface to an inner wall of the annular groove in a radial direction thereof is r2, a relation of $r1 - r2 \geq -1.0$ mm is established.

5. A gasdynamic bearing motor according claim 1 or 2, wherein a deformation of the inner circumferential surface of said rotor assembly in a radial direction thereof after the recording disks are loaded on the disk receiving portion as compared with the inner circumferential surface thereof before the recording disks are loaded on the disk receiving portion is equal to or less than one half of the clearance between the outer circumferential surface of said stationary shaft and the inner circumferential surface of said rotor assembly.

6. A gasdynamic bearing motor comprising:

a stationary shaft having a cylindrical surface; and

a rotor assembly having a cylindrical portion facing the stationary shaft with a predetermined clearance interposed therebetween in a radial direction of the stationary shaft and freely rotatably fitted with the stationary shaft, wherein

a pressure generating groove is formed on at least one of an outer circumferential surface of said stationary shaft and an inner circumferential surface of said rotor assembly to thereby construct a radial bearing,

a flange-shaped disk receiving portion extending outwardly in a radial direction is provided at the lower end of said rotor assembly, a predetermined number of recording disks are loaded on the disk receiving portion, a clamp is disposed on the uppermost portion and fixed to said rotor assembly to squeeze the recording disks between the disk receiving portion and the clamp with a predetermined force for fixation of the recording disks, and

said rotor assembly is rotated by a driving motor to hold said rotor assembly and recording disks in a non-contact manner with said stationary shaft, with the action of a dynamic pressure of a gas residing in a clearance between said stationary shaft and said rotor assembly, characterized in that

an outer diameter of said stationary shaft is constant in an axial direction thereof, while a diameter of the inner circumferential surface of said rotor assembly changes in an axial direction thereof when no recording disk is loaded on the disk receiving portion so that a clearance between the outer circumferential surface of said stationary shaft and the inner circumferential surface of said rotor assembly is almost constant in the axial directions thereof when the recording disks are loaded on the disk receiving portion.

7. A gasdynamic bearing motor according to claim 6, wherein the diameter of the inner circumferential surface of said rotor assembly takes a minimum value in the substantial middle in the axial direction thereof and changes smoothly in the axial direction thereof to take a maximum value at the lower end on the disk receiving portion side.

8. A gasdynamic bearing motor according to claim 6, wherein the diameter of the inner circumferential surface of said rotor assembly assumes a curved shape gradually increasing

toward the end on the disk receiving portion side from the substantial middle in the axial direction thereof.

9. A gasdynamic bearing motor according to claim 6, wherein the diameter of the inner circumferential surface of said rotor assembly assumes a tapered shape increasing toward the end on the disk receiving portion side from the substantial middle in the axial direction thereof.

10. A gasdynamic bearing motor comprising:

a stationary shaft having a cylindrical surface; and

a rotor assembly having a cylindrical portion facing the stationary shaft with a predetermined clearance interposed therebetween in a radial direction of the stationary shaft and freely rotatably fitted with the stationary shaft, wherein

a pressure generating groove is formed on at least one of an outer circumferential surface of said stationary shaft and an inner circumferential surface of said rotor assembly to thereby construct a radial bearing,

a flange-shaped disk receiving portion extending outwardly in a radial direction is provided at the lower end of said rotor assembly, a predetermined number of recording disks are loaded on the disk receiving portion, a clamp is disposed on the uppermost portion and fixed to said rotor assembly to squeeze the recording disks between the disk receiving portion and the clamp with a predetermined force for fixation of the recording disks, and

said rotor assembly is rotated by a driving motor to hold said rotor assembly and the recording disks in a non-contact manner with said stationary shaft, with the action of a dynamic pressure of a gas residing in a clearance between said stationary shaft and said rotor assembly, characterized in that

an inner diameter of said rotor assembly is constant in

the axial direction thereof, while a diameter of the outer circumferential surface of said stationary shaft changes in the axial direction thereof so that a clearance between the outer circumferential surface of said stationary shaft and the inner circumferential surface of said rotor assembly is almost constant in the axial directions thereof when the recording disks are loaded on the disk receiving portion.

11. A gasdynamic bearing motor according to claim 10, wherein the diameter of the outer circumferential surface of said stationary shaft assumes a shape gradually changing so that a diameter takes a maximum value in the substantial middle in the axial direction thereof and a minimum value at the end on the disk receiving portion side.

12. A gasdynamic bearing motor according to claim 10, wherein the diameter of the outer circumferential surface of said stationary shaft assumes a curved shape so that a diameter decreases gradually toward the end on the disk receiving portion side from the substantial middle in the axial direction.

13. A gasdynamic bearing motor according to claim 10, wherein the diameter of the outer circumferential surface of said stationary shaft assumes a tapered shape so that the diameter decreases toward the end on the disk receiving portion side from the substantial middle in the axial direction thereof.

14. A gasdynamic bearing motor according to any of claims 6 to 13, wherein a difference between the maximum value and minimum value of a clearance between the outer circumferential surface of said stationary shaft and the inner circumferential surface of said rotor assembly is equal to or less than one half of the clearance when the recording disks are loaded on the disk receiving portion.

15. A gasdynamic bearing motor according to any of claims

6 to 13, wherein the annular groove according to claim 1 is provided.

16. A gasdynamic bearing motor according to any of claims 6 to 13, wherein a difference in radius between the inner and outer circumferential surfaces of said rotor assembly is 3 mm or less.

17. A gasdynamic bearing motor according to any one of claims 1, 6 and 10, wherein said stationary shaft includes a cylindrical shaft and a ring-shaped thrust plate fixed inside the upper end of the stationary shaft, the lower end of said stationary shaft is fixed to a base, a lidded cylindrical hub is fitted with said stationary shaft and the upper surface of the thrust plate so as to surround them with a predetermined clearance interposed therebetween, a pin with a magnet fixed at the lower portion thereof is fixed in a central hole of the hub, a flange is provided above the magnet of the pin, the thrust plate is sandwiched between the internal upper surface of the hub and the flange on the pin, said rotor assembly comprises the hub, the pin and the magnet, and a stator core assembly is fixed to the base to oppose the magnet, whereby an inner rotor type motor is constructed.

18. A gasdynamic bearing motor according claim 17, wherein a protrusion is provided on the base in a circumferential direction thereof and fitted in the annular groove provided on said rotor assembly with a predetermined clearance interposed therebetween, thereby to form a labyrinth seal.

19. A hard disk drive using a gasdynamic bearing motor according to any of claims 1, 6 and 10.